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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,254	11/17/2003	Hai Deng	42P17284	6503

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EXAMINER
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OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/716,254

Applicant(s)

DENG, HAI

Examiner

Allan Olsen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-46 is/are pending in the application.  
4a) Of the above claim(s) 29-46 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1 and 3-28 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 16 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 29-46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. The election, without traverse, was acknowledged in the reply filed on March 16, 2006.

### ***Claim Objections***

Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form because it does not appear to further limits the subject matter of claim 15. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

Claims 14 and 24 are objected to because of misspellings.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 3, 4, 6, 8, 9 and 11-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogihara's et al. US Patent Application Publication 2004/0091419 (hereinafter, Ogihara).**

Ogihara teaches creating a colloidal zeolite-sol. Ogihara teaches the sol may comprise up to 30 parts by weight of zeolite to 1 part of silane. Ogihara teaches spin coating the zeolite -sol onto a semiconductor substrate. Ogihara teaches treating the sol under the same conditions that applicant teaches. For example, Ogihara and applicant both dry the zeolite material, by heating under the same conditions, which results in: oxidizing the zeolite-sol; forming a gel-zeolite composite; calcining the gel zeolite-composite; forming an aerogel-zeolite composite. Ogihara teaches the zeolite-sol comprises silica. Ogihara teaches the sol comprises an alcohol such as methanol, ethanol and propanol. Ogihara teaches the sol comprises HCl. Ogihara teaches the sol comprises TEOS. See paragraphs: [0032], [0035], [0037], [0055], [0076], [0078], [0089], [0101], [0112] and [0126].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 5, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogihara.**

Ogihara does not teach using vacuum conditions to dry the zeolite material.

It would have been obvious to one skilled in the art to dry the zeolite material of Ogihara under reduced pressure condition because this is well known and widely used means of controlling the rate of drying.

**Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogihara in view of Martin's US Patent Application Publication 2002/0197645 (hereinafter, Martin).**

Ogihara does not teach dip-coating the zeolite-sol.

Martin teaches methods of coating layers of zeolite material on substrates (see [0217] and [0223]).

It would have been obvious to one skilled in the art to dip-coat the zeolite sol of Ogihara because Martin teaches that dip-coating and spin-coating are functionally equivalent methods of depositing zeolite materials.

### ***Response to Arguments***

Applicant's arguments filed March 13, 2006 have been fully considered but they are not persuasive. Applicant argues the claims are limited to a process of forming a wet gel, which the specification indicates allows for the dielectric to be viscous and pliable, so as not to crack during hardening or further processing steps. Applicant argues that Ogihara does not contemplate extraction of some of the liquid, i.e. solvent, to form a wet gel to withstand further processing, but rather, Ogihara teaches removing all of the solvent thereby creating a final hardened porous film.

The examiner notes that claim 1 recites a “method...comprising...” and the open claim language allows for the inclusion of additional method steps that are not explicitly recited. More importantly, however, it is noted that claim 13, which is dependent upon claim 1, is directed to a method “comprising extracting approximately all of the remaining liquid from the wet gel - zeolite composite.” As such claim 13 is directed to that which applicant admits is taught by Ogihara. Applicant appears to rely on the notion that the claimed wet-gel product of claim 1, which is an intermediate to the product of claim 13, is different from that which is obtained in the course of removing the solvent from Ogihara’s zeolite-sol.

However, the following excerpts from applicant’s specification (with emphasis added) reveals that the scope of the claimed “wet gel zeolite composite” encompasses a broad range of material, including the intermediate products of Ogihara, which are ultimately dried to yield a material that corresponds to applicant’s claimed aerogel-zeolite composite.

*[0004] Sol -gel materials, such as silica sol gels, start as a sols, or solutions, and go through a phase transition to form a wet gel. Typically, the solvent is extracted from the wet gel to form an ILD*

*[0020] The zeolite-sol colloid may be formed into a wet gel by extracting at least some of the liquid/solvent present in the zeolite - sol colloid, as illustrated in extraction step 405. **Any amount of liquid may be extracted to form a wet gel with different properties.** For example, a small amount of liquid may be extracted leaving the wet gel viscous and pliable, so as not to crack during hardening or further processing steps. As another example, some or **almost all of the liquid may be extracted to form a wet gel** that is closer to a solid phase transition having different mechanical properties.*

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M-F 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Allan Olsen', with a stylized flourish at the end.

Allan Olsen  
Primary Examiner  
Art Unit 1763